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10/661,535	09/15/2003	Hitoshi Hirakawa	122.1568	8025

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STAAS & HALSEY LLP  
SUITE 700  
1201 NEW YORK AVENUE, N.W.  
WASHINGTON, DC 20005

EXAMINER
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SHERMAN, STEPHEN G

ART UNIT	PAPER NUMBER
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2629

DATE MAILED: 06/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/661,535

Applicant(s)

HIRAKAWA ET AL.

Examiner

Stephen G. Sherman

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

1. This office action is in response to the amendment filed the 8 June 2006. Claims 1-21 are pending.

### ***Response to Arguments***

2. Applicant's arguments filed the 8 June 2006 have been fully considered but they are not persuasive.

On page 11 of the amendment, starting in paragraph 6 under the remarks heading, the applicant argues that since the Awaji reference discloses of lighting all of the cells including cells which are not to be lit, that the reference does not teach of the "constitution of the present invention."

In reply, the examiner asserts that the Awaji reference does not need to disclose or suggest the constitution of the invention, but instead what is claimed. The claims only recite that all of the cells to be lit by causing light emission in the sustain period in a display field are lit in a predetermined subfield. The claims do not mention that cells not to be lit in a display field are not lit. Therefore, the examiner asserts that all of the cells lit in a predetermined subfield are the "cells to be lit" as recited in the claims.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2, 4, 9-10 and 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Awaji (JP 2000-148085 A).

***Regarding claim 1***, Awaji discloses a method for driving a plasma display panel, wherein

a display field, corresponding to a display of a screen, is composed of a plurality of subfields (Drawing 3 and Paragraph [0029]. The display field f is divided into 5 subfields sf1-sf5.),

a gradation display is realized by combining subfields to be lit among the plurality of subfields (Paragraph [0029]. The examiner interprets that since the display field is divided into subfields in order to perform a gradation display that a gradation display would be realized by the combination of these subfields.),

each subfield comprises at least an address period to write cells to be lit in the subfield and a sustain period to cause light emission to occur in the written cells (Drawing 3 and paragraphs [0029]-[0030]. In Drawing 3 it can be seen that there is an address period TA and a sustain period TS.), and

all of the cells to be lit by causing light emission in the sustain period in a display field are lit in a predetermined subfield among the plurality of subfields making up the display field (Drawing 3 and paragraph [0031]. The examiner interprets that making all of the discharge cells turn on is equivalent to lighting all of the cells.).

**Regarding claim 2**, Awaji discloses a method for driving a plasma display panel, as set forth in claim 1, wherein the predetermined subfield is a subfield with the lowest luminance ratio (Paragraph [0017]. The examiner interprets that the smallest subfield is the subfield with the lowest luminescence ratio.).

**Regarding claim 4**, Awaji discloses a method for driving a plasma display panel, as set forth in claim 1, wherein the predetermined subfield is the subfield at the head in a display field (Paragraph [0017]. The examiner interprets that since the adjustment could be made in the any subfield, that the subfield at the head would be a subfield where the adjustment could be made.).

**Regarding claim 9**, Awaji discloses a method for driving a plasma display panel, as set forth in claim 1, wherein the subfield with the lowest luminance ratio is arranged at the head in a display field and the predetermined subfield is arranged in the second position in the display field (Drawing 3 and paragraphs [0029]-[0032]. The examiner interprets that since the discharge occurs in sf2, that this is the subfield in the second

position and that the display field at the head is the one with the lowest luminance ratio since the sustain period for that subfield is the smallest.).

**Regarding claim 10**, Awaji discloses a method for driving a plasma display panel, as set forth in claim 9, wherein the predetermined subfield is one with the second lowest luminance ratio (Drawing 3 and paragraph [0031]. The examiner interprets that since sf2 is in the second position and has the second smallest sustain period that it is the subfield with the second lowest luminance ratio.).

**Regarding claim 19**, A method for driving a plasma display panel, as set forth in claim 1, wherein the gradation display level is determined with the luminance due to lighting in the predetermined subfield being taken into consideration (Paragraph [0031]. The examiner interprets that if the predetermined subfield is sf2 which is part of the gradation display level that the predetermined subfield would be taken into consideration.).

**Regarding claim 20**, Awaji discloses a plasma display device comprising a plasma display panel and a driving circuit for the plasma display panel, wherein the driving circuit drives the plasma display panel using the driving methods set forth in claim 1 (Drawings 1 and 2).

**Regarding claim 21**, this claim is rejected under the same rationale as claims 1 and 2.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Awaji (JP 2000-148085 A) in view of Naka et al. (US 2002/0191008).

**Regarding claim 3**, Awaji discloses a method for driving a plasma display panel, as set forth in claim 1.

Awaji fails to teach a method wherein a display field has a subfield with a same luminance ratio as that of the predetermined subfield, in addition to the predetermined subfield.

Naka et al. disclose of a method for driving a plasma display panel wherein a display field has two subfields with the same luminance ratio (Figure 12 and paragraphs [0091]-[0094]. Figure 12 shows SF3-SF6 containing the same luminance ratio.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the method of having two subfields with the same luminance ratio as taught by Naka et al. with the method of driving a plasma display panel as taught by Awaji to reduce false contour interference as a problem in moving image display based on the subfield method.

8. Claims 5-6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Awaji (JP 2000-148085 A) in view of Tokunaga et al. (2003/0011540).

**Regarding claim 5**, Awaji discloses a method for driving a plasma display panel, as set forth in claim 1.

Awaji fails to teach of a method wherein an all-cell write discharge is caused to occur in the predetermined subfield before the address period.

Tokunaga et al. disclose a method for driving a plasma display panel wherein an all-cell write discharge is caused to occur in a subfield before the address period

(Paragraph [0032]. The examiner interprets that initializing the cells into a lit discharge state is an all-cell write discharge and that this happens prior to the address period.).

Therefore it would have been obvious to “one of ordinary skill” in the art at the time the invention was made to use the method of having an all-cell write discharge before the address period as taught by Tokunaga et al. with the method of driving a plasma display panel as taught by Awaji in order to provide a plasma display panel drive method that produces a stable discharge effect while increasing contrast.

**Regarding claim 6**, Awaji discloses a method for driving a plasma display panel, as set forth in claim 1. Awaji also discloses wherein the predetermined subfield is also a subfield with a heavy weight of luminance (Paragraph [0017]. The examiner interprets that the largest subfield is the one with the heavy weight of luminance.).

Awaji fails to teach of a method wherein an all-cell write discharge is caused to occur in the predetermined subfield before the address period.

Tokunaga et al. disclose a method for driving a plasma display panel wherein an all-cell write discharge is caused to occur in a subfield before the address period (Paragraph [0032]. The examiner interprets that initializing the cells into a lit discharge state is an all-cell write discharge and that this happens prior to the address period. The examiner interprets then that if the predetermined subfield is a subfield with a heavy weight of luminance that an all-cell write discharge would be caused to occur in the predetermined subfield and a subfield with a heavy weight of luminance before the address period.).

Therefore it would have been obvious to “one of ordinary skill” in the art at the time the invention was made to use the method of having an all-cell write discharge before the address period as taught by Tokunaga et al. with the method of driving a plasma display panel as taught by Awaji in order to provide a plasma display panel drive method that produces a stable discharge effect while increasing contrast.

***Regarding claim 11***, Awaji discloses a method for driving a plasma display panel, as set forth in claim 9.

Awaji fails to teach a method wherein an all-cell write discharge is caused to occur in the subfield at the head and the predetermined subfield before the address period.

Tokunaga et al. disclose a method for driving a plasma display panel wherein an all-cell write discharge is caused to occur in the subfield at the head and all other subfields before the address period (Figure 2A and paragraphs [0011] and [0018]. The examiner interprets that the full reset  $R_c$  is the all-cell write discharge, which is cause to occur in every subfield of Figure 2A, which would include the subfield at the head and the predetermined subfield.).

Therefore it would have been obvious to “one of ordinary skill” in the art at the time the invention was made to use the method of having an all-cell write discharge before the address period as taught by Tokunaga et al. with the method of driving a plasma display panel as taught by Awaji in order to provide a plasma display panel drive method that produces a stable discharge effect while increasing contrast.

9. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Awaji (JP 2000-148085 A) in view of Tokunaga et al. (2003/0011540) and further in view of Tokunaga et al. (US 2003/0067425).

**Regarding claim 7**, Awaji and Tokunaga et al. (2003/0011540) disclose a method for driving a plasma display panel, as set forth in claim 5.

Awaji and Tokunaga et al. (2003/0011540) fail to teach a method wherein the all-cell write discharge is caused to occur twice successively in the predetermined subfield.

Tokunaga et al. (US 2003/0067425) disclose a method for driving a plasma display panel wherein a reset is caused to occur twice in a subfield (Figure 18 and paragraph [0158]. R<sub>ODD</sub> and R<sub>EVE</sub> are both reset charges which are each caused to occur in a single subfield.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the method of having two reset discharges occur in a subfield as taught by Tokunaga et al. (US 2003/0067425) with the method taught by the combination of Awaji and Tokunaga et al. (2003/0011540) in order to provide a display device and a method of driving a display panel which are capable of improving the dark contrast.

**Regarding claim 8**, Awaji and Tokunaga et al. (2003/0011540) disclose a method for driving a plasma display panel, as set forth in claim 5.

Awaji and Tokunaga et al. (2003/0011540) fail to teach a method wherein a subfield reset discharge is caused to occur in order to erase the residual charges in a lit cell in the subfield immediately before the subfield in which the all-cell write discharge is caused to occur.

Tokunaga et al. (US 2003/0067425) disclose a method for driving a plasma display panel wherein a subfield reset discharge is caused to occur in order to erase the residual charges in a lit cell in the subfield immediately before another subfield (Figure 18 and paragraph [0158]. The examiner interprets that the erasure stage E is a stage in which a reset discharge is caused to occur in order to erase the residual charges in a lit cell, and that since this occurs in every cell the erasure stage would occur before the predetermined subfield.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the method of having a reset discharge in a subfield as taught by Tokunaga et al. (US 2003/0067425) with the method taught by the combination of Awaji and Tokunaga et al. (2003/0011540) in order to provide a display device and a method of driving a display panel which are capable of improving the dark contrast.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Awaji (JP 2000-148085 A) in view of Tokunaga et al. (US 2003/0067425).

**Regarding claim 12**, Awaji discloses a method for driving a plasma display panel, as set forth in claim 9.

Awaji fails to disclose a method wherein a subfield reset discharge is caused to occur in order to erase the residual charges in a lit cell in the subfield at the head.

Tokunaga et al. disclose a method for driving a plasma display panel wherein a subfield reset discharge is caused to occur in order to erase the residual charges in a lit cell in the subfield at the head (Figure 18 and paragraph [0158]. The examiner interprets that the erasure stage E is a stage in which a reset discharge is caused to occur in order to erase the residual charges in a lit cell, and the E stage is shown to be in the subfield at the head.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the method of having a reset discharge in a subfield at the head as taught by Tokunaga et al. (US 2003/0067425) with the method taught by the combination of Awaji and Tokunaga et al. (2003/0011540) in order to provide a display device and a method of driving a display panel which are capable of improving the dark contrast.

11. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Awaji (JP 2000-148085 A) in view of Moon (US 2003/0098826).

**Regarding claim 13**, Awaji discloses a method for driving a plasma display panel, as set forth in claim 1.

Awaji fails to teach of a method wherein the widths of an address pulse and a scan pulse during the address period in the predetermined subfield are wider than those of the address pulse and the scan pulse during the address period in other subfields.

Moon discloses a method for driving a plasma display panel wherein the widths of an address pulse and a scan pulse during the address period in a subfield are wider than those of the address pulse and the scan pulse during the address period in other subfields (Paragraphs [0069]-[0071]. The examiner interprets that since the width of the scan pulses of some scan lines are larger than others and that the data pulses synchronized with the scan pulses are also set to be larger than the scan and address pulse applied during an address period would be wider than those in other subfields.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the method of having wider pulses in the predetermined subfield as taught by Moon with the method taught by Awaji in order to allow for the cells to generate high luminance.

12. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Awaji (JP 2000-148085 A) in view of Hashimoto et al. (US 2001/0017605) and further in view of Tokunaga et al. (JP 2000-276106 A).

**Regarding claim 14**, Awaji discloses a method for driving a plasma display panel, as set forth in claim 1.

Awaji fails to teach a method wherein the voltage of an address pulse during the address period in a subfield is raised.

Hashimoto et al. disclose a method for driving a plasma display panel wherein the voltage of an address pulse during the address period in a subfield is raised (Paragraph [0070]).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the method of raising the voltage of an address pulse as taught by Hashimoto et al. with the method taught by Awaji in order to increase writing probability.

Awaji and Hashimoto et al. fail to teach a method for driving a plasma display panel wherein the voltage of a pulse in a subfield is larger than the voltage of pulses in the other subfields.

Tokunaga et al. disclose a method for driving a plasma display panel wherein the voltage of a pulse in a subfield is larger than the voltage of pulses in the other subfields (Abstract: Solution. The examiner interprets that since one subfield is indicated as to having a pulse with a larger voltage than the other subfields, that this subfield could be the predetermined subfield.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the method of having a larger pulse voltage in the predetermined subfield as taught by Tokunaga et al. with the method taught by the combination of Awaji and Hashimoto et al. in order to enhance contrast with low power

consumption while suppressing a spurious profile also and moreover to enhance display quality by stabilizing selective discharge.

13. Claims 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Awaji (JP 2000-148085 A) in view of Tokunaga et al. (JP 2000-276106 A).

**Regarding claim 15**, Awaji discloses a method for driving a plasma display panel, as set forth in claim 1.

Awaji fails to teach a method wherein the voltage of a scan pulse during the address period in the predetermined subfield is greater than that of the scan pulse during the address period in other subfields.

Tokunaga et al. disclose a method for driving a plasma display panel wherein the voltage of a scan pulse during the address period in the predetermined subfield is greater than that of the scan pulse during the address period in other subfields (Abstract: Solution. The examiner interprets that since one subfield is indicated as to having a scanning pulse with a larger voltage than the other subfields, that this subfield could be the predetermined subfield.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the method of having a larger scanning voltage in the predetermined subfield as taught by Tokunaga et al. with the method taught by Awaji in order to enhance contrast with low power consumption while suppressing a

spurious profile also and moreover to enhance display quality by stabilizing selective discharge.

14. Claims 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Awaji (JP 2000-148085 A) in view of Kanazawa et al. (US 2001/0054993).

**Regarding claim 16**, Awaji discloses a method for driving a plasma display panel, as set forth in claim 1.

Awaji fails to teach a method for driving a plasma display panel wherein a process to suppress a discharge in an unlit cell is performed between the address period and the sustain period in the predetermined subfield.

Kanazawa et al. disclose a method for driving a plasma display panel wherein a process to suppress a discharge in an unlit cell is performed between the address period and the sustain period in a subfield (Figure 17 and paragraphs [0083]-[0084]. The examiner interprets that the voltage applied to generate an auxiliary discharge is a process to suppress a discharge in an unlit cell.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the method of adding an additional pulse period as taught by Kanazawa et al. with the method for driving a plasma display panel as taught by Awaji in order to extinguish a wall charge of a cell in which an erroneous discharge has occurred.

**Regarding claim 17**, Awaji and Kanazawa et al. disclose a method for driving a plasma display panel, as set forth in claim 16. Kanazawa et al. also disclose wherein the process to suppress a discharge in an unlit cell is a process in which, at the same time an address pulse is applied to an address electrode (Figure 17, P1 is a pulse applied to the address electrode.), a pulse, the applied voltage of which varies as time elapses, is applied to a scan electrode (Figure 17. The pulse applied during the additional pulse period on X(X2) starts at 0V the reduces to -50V, therefore the voltage applied during the period varies as time elapses.).

**Regarding claim 18**, Awaji and Kanazawa et al. disclose a method for driving a plasma display panel, as set forth in claim 17. Kanazawa et al. also disclose wherein the final potential of the pulse, the applied voltage of which varies as time elapses (Figure 17, the final potential of the pulse is -50V), is lower than the finally reached potential of a charge control pulse, the applied voltage of which varies as time elapses (Figure 17, the examiner interprets that the pulse applied to the address electrode, which starts at 0V and raises to 50 V, is the charge control pulse, in which the -50V pulse is lower than the 50V pulse.).

### **Conclusion**

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

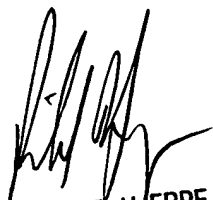
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2629

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SS

14 June 2006



RICHARD HJERPE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600